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EXPLORING THE CANADIAN NORTHWEST

Prof. John Macoun of the Geological Survey of Canada wrote a while ago:

"There can be no question about the value of the land north of the Saskatchewan, and settlers going in there are assured of three essentials—wood, water and hay for cattle. * * * The low altitude, and the long day are fixed conditions and will always remain the same."

A vast area north of the north branch of the Saskatchewan is considerably lower in altitude than the southern part of the Canadian prairie. Prince Albert is nearly 500 feet lower than Regina and Stanley on the Churchill River is 260 feet lower than Prince Albert; and, of course the summer days are longer than in the more southern latitudes. These and other facts have for several years encouraged the Canadian Government to study the question whether conditions to the north of the Saskatchewan favor grain growing, and whether there are natural resources of timber, hay, fish and game sufficient to increase the value of these lands to incoming settlers. The Canadian Department of the Interior has just published the latest report on these investigations in Canada's new northwest.*

Mr. Crean's report of his two years' work, including information collected from others, covers an area of approximately 40,000,000 acres. The purpose of his work was to ascertain the value of this area for farming, lumbering and mining. He was expected to report upon the nature of the soil, the various kinds of forest trees, the extent, size and quality of timber, the economic minerals, if any, valuable water power, etc.

The large map published with the report shows that the territory studied embraces most of the region between 54°—57° N. Lat. and 104°—113° W. Long. Sprinkled over it are an enormous number of lakes, the names of some of which, such as Lake Montreal, Lac la Plonge, Green Lake and others have long appeared on our maps. Mr. Crean says that large numbers of lakes have never been mapped. His routes are in red, and Hudson Bay posts, Catholic and Protestant Missions and Indian villages are scattered over the sheet; and notes in red type indicate the nature of the country. Remarks such as

* New Northwest Exploration. Report of Exploration by Frank J. P. Crean, C. E., in Saskatchewan and Alberta, north of the surveyed area, 1908-1909. Department of the Interior, Ottawa, 1910.

"fine agricultural land," "wheat, oats, barley and vegetables," "heavily timbered valleys," "fine spruce and poplar" are sprinkled over the sheet; near the 57th parallel, lands are marked as "fine" and "barley, oats and splendid gardens," is the legend printed with some of these northern missions and villages. The map is very interesting for the insight it gives into the resources and prospects of a great region to the north of present white settlement.

In 1908, Mr. Crean traversed the eastern half of this area, completing his work in the western half in 1909. He found a sprinkling of whites—missionaries, hunters, trappers and traders, and an important number of Indians. Some of the whites have for years been

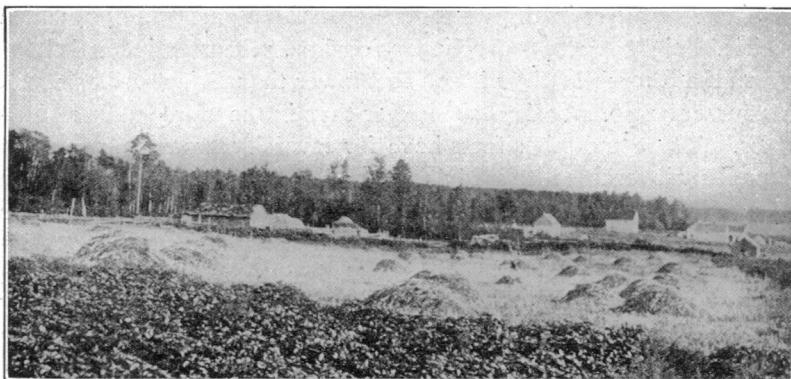


FIG. 1—Green Lake Settlement. $54^{\circ} 15' N.$

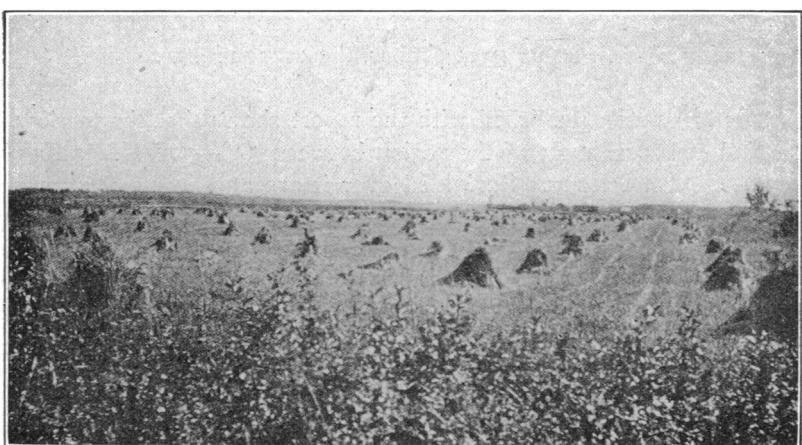


FIG. 2—Farm at Mt. Nebo on the Green Lake Trail, 65 miles from Prince Albert. About $53^{\circ} 45' N.$

raising vegetables and cereals, with abundant hay for their horses and cattle, but little has been known of them for their habitat has been almost inaccessible, and its resources and capabilities have never been carefully studied.

In the southern part of this district, the country is broken by deep coulées in the prairie. Farther north the country becomes flat and low, with many swamps. In the area visited in 1908, embracing about 22,000,000 acres, Mr. Crean estimates that fully 5,000,000 acres are suitable for settlement as soon as surveyed and made accessible by roads; and an area of about 12,000,000 acres of swamp or land, probably too wet at present for successful cultivation, may be reclaimed



FIG. 3—Banner oats at English Mission, Lac la Plonge. $55^{\circ} 5' N.$ Wheat is grown successfully here.



FIG. 4—Sawmill at R. C. Mission, Lac la Plonge. Run by water power. $55^{\circ} 7' N.$

at little expense. He believes that all this swamp will eventually repay the cost of reclamation.

The soils are light loam with blue clay or sandy clay subsoils, and much of the agriculture land appears to be as fertile as could be desired. Of course, the winter is cold, but no colder or longer than in some of the settled parts of Saskatchewan. At Portage la Loche ($56^{\circ} 45'$ N. Lat.) the potato tops had not been touched with frost on Sept. 17. The rainfall is ample though not excessive, and the heaviest rains occur in the early summer, when rain is most needed for farming. The snowfall is generally not heavy, seldom exceeding eighteen inches.

Along the Big River in the southern part of the tract, is a splendid ranching country, hay abounds and water and shelter are easily

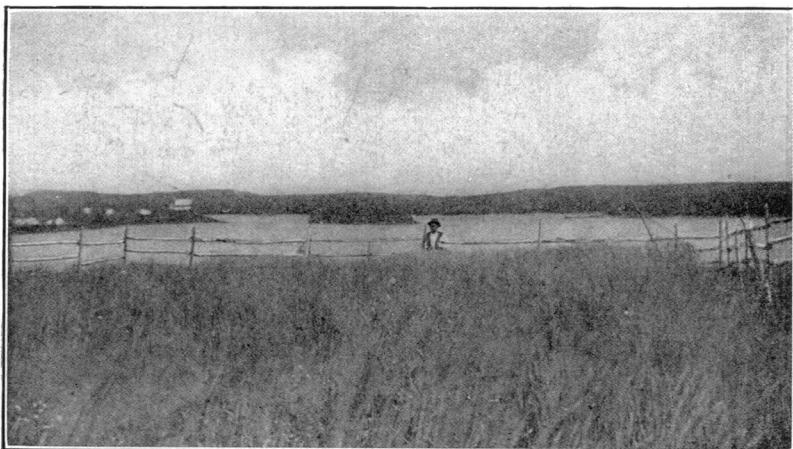


FIG. 5—Preston Wheat Field, Stanley, Churchill River. $55^{\circ} 30'$ N.

obtained. The valley of the Clearwater River, which crosses the 57th parallel would supply a cattle range, which Mr. Crean thinks would be hard to beat. He believes that mixed farming will be the industry best adapted for the entire tract explored. Game of all kinds is numerous, and moose are still plentiful, though they are being killed in large numbers by the natives and wolves. The staple food of the Indian is fish, and he has an ample supply. White fish are found in all the myriad lakes and rivers; most of the country is covered with small timber, not generally of commercial value, though usually there is ample timber for the use of the settlers, but not enough to supply any lumber industry.

In the northern part of the region north of the Churchill River,

is a district of much promise from a mineral point of view. There is an enormous amount of water power which may be utilized to create industrial centers. On almost every stream there are sites where small water power may easily be developed for grist mills, saw mills, pumping and lighting plants.

Mr. Crean says that wheat may be grown in almost any part of this northern region. Of course northern latitudes increase the likelihood of summer frosts; but wheat, barley and oats are now matured every season in portions of this area. The settlers at Meadow Lake say that two loads of hay will winter each head of stock; and hay grows in such profusion that two loads to the animal may easily be obtained even for a large herd of cattle. He believes that pigs also will thrive well in the north and though this territory



FIG. 6—Potatoes at English Mission, Lac la Plonge. $55^{\circ} 5' N.$

can never compete with the more southerly latitudes in the wheat market, still by judicious mixed farming it will eventually be equally productive and support a dense, thriving population.

The Meadow Lake section, north of the 54th parallel, is practically a prairie and contains in Mr. Crean's opinion, some of the very finest farming land in Canada. The soil is rich, there being in some areas 24 inches of black loam, with clay subsoil. The open prairie country is about twelve miles wide and extends from Meadow Lake about fifty miles west. At an Indian farm instructor's house, he saw a plot of five acres of the finest oats; and in the gardens are practically all the vegetables raised in southern Canada. One of the traders, a half-breed named Cyprian Morin, has raised barley and

vegetables every year for twenty years, and has eighty head of cattle and thirty-five horses.

The beautiful valley of the Clearwater River, near the 57th parallel is covered with pea vine, vetch, red-top, and upland hay, growing in profusion. It will, in Mr. Crean's opinion, make a magnificent cattle range and farming country. There are large open prairies, the grass is fine and the soil is a good loam, with a sandy clay subsoil. When the railroad now planned reaches McMurray on the Athabasca, there is no doubt that a large agricultural settlement will take possession of this fine valley.

The statements here reproduced from Mr. Crean's report are sufficient to show that, in all probability, Canada has a large reserve for settlement in the territory to the north of the lands now surveyed in Alberta and Saskatchewan. Before many years this great region will have steam connections with the settled regions to the south, and then the utilization of the northern territory will begin. There is little doubt that in the near future this part of Canada will be the home of thousands of farmers and stock raisers.

NOTES ON THE DESCRIPTION OF LAND FORMS.—IV.

WELLINGTON HARBOR, NEW ZEALAND. By what method can a scientific observer who has seen and studied a certain district give the best account of it to a scientific reader who has not seen it? The method followed in some essays is to begin with an empirical description of the observed facts, arranged in order of their distribution and phrased in popular language, and then on a later page, after some account of the geology of the district has been given, to present the geographical facts again, but this time in genetic order and in technical, explanatory phrase. Yet the very author who follows this two-fold method in his geographical presentation may in the same essay introduce his geological matter immediately in thoroughly technical style. Perhaps the reason for the adoption of methods so unlike for the two sciences is a semi-conscious feeling that geography is not yet ripe for so advanced a treatment as is proper in geology; that geographical descriptions must be at least introduced in an empirical and popular form, even if they are intended for readers who can at once understand geological technicalities, and who can on a later page than the first understand geographical technicalities also.

Anyone who has had experience in discussing problems of this kind with geographical authors differing in temperament and training must know that